

OBITUARY

Dr. Henry Bernard Davis Kettlewell (1907-1979),

M.A., D.Sc. (Oxon), M.B., B.Chir. (Cantab), M.R.C.S., L.R.C.P. Darwin Medal U.S.S.R. 1959. Mendel Medal 1965. Fellow of Iffley College, Oxford, 1965-1966. Fellow of Wolfson College, Oxford, 1966-1974 (Emeritus, 1974-1979). Research Officer, Department of Zoology, University of Oxford, 1959-1974. An Assistant Editor, *Entomologist's Record*, 1972-1979.

By SIR CYRIL A. CLARKE *

Bernard Kettlewell died at his home near Oxford on May 11th 1979, aged 72. He was a household name to everyone interested in natural history, and known to thousands of entomologists throughout the world for his research on industrial melanism.

Born in Birmingham, his interest in Lepidoptera began as a small child, but it was at Charterhouse that he was channelled into his future career. Being of an unruly nature, he was always trying to find ways of breaking bounds, and the Biology moth trap (at some distance from the school) provided an excellent excuse. Soon, however, the light attracted him as well as the moths, and he was off to a flying start.

He and I were exact contemporaries at Caius (1926- 1929) and because he was as wild as any of us at a party we only regarded him as mildly eccentric with his butterfly net, rucksack and bicycle — little did we realise that he already knew where he was going whereas we did not. Much later as his and my interests converged we saw increasingly more of each other, and our houses and gardens, with their cages and sleeves, bore strong similarities.

After Cambridge he qualified at Bart's and in 1935 went into general practice at Cranleigh. The next important event was his marriage in 1936 to Hazel, daughter of Sir Frank Wiltshire, the Town Clerk of Birmingham. They had one daughter who died young, and one son. David and Hazel survive him, and no account of Bernard is complete without recording how much he owed to his devoted Hazel. She not only helped him greatly in all his work but had to contend with more than the usual ups and downs of married life, living as she did with such a brilliant but volatile character.

Kettlewell will always be remembered as the "K" in the National (RCK) Collection, and he made a most important contribution by presenting to it his research collection of bred broods which beautifully demonstrated in many species the genetics of melanism. He showed some of the living moths at the Royal Society Conversazione in 1955 and many will remember their sensational escape and flutterings round the august chandeliers.

In 1946, saddened by the approach of the National Health Service, Bernard decided to forsake medicine and he emigrated with his family to South Africa to carry out research in locust

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(We are grateful to Mr. Eric Bradford for preparing the photo of Dr. Kettlewell — EDITOR.)

control at Cape Town University. During his time there he amassed a superb collection of South African Lepidoptera (particularly moths) which he later presented to the British Museum.

In 1952 he returned to England, having been offered a Nuffield Research post in the genetics laboratories at Oxford University, working under E. B. Ford, and this was his base until retirement. During these years, in addition to innumerable field studies in this country, he lectured extensively in the U.S.A. and Canada and also visited Brazil. I personally recall his splendid one-man trip to Corsica in 1955 to bring back living *Papilio hospiton* for our hybrid studies with *machaon*. No problem then of "If only I'd come three weeks earlier" or "It was an exceptionally bad season" — back came the butterflies, efficiently despatched and all eventualities considered.

Bernard's fame rests on his explanation of the phenomenon of industrial melanism, and *Biston betularia* was the chief object of his study. In 1955 he proved by observation that there was superior viability of f. *carbonaria* in industrial areas, and that those moths which did not effectively match their backgrounds were in fact destroyed by birds. This was done in a series of painstaking experiments, in which he placed different forms of *betularia* on tree trunks in polluted and unpolluted areas. In 1958 there followed the *betularia* distribution paper, with the explanation of why *carbonaria* was not only high in industrial centres but also on the east coast, and the proof that *insularia* was the "melanic" of semi-industrial areas. In 1965 a follow-up of this great work was published — a 12-year survey which included 37,000 records of *betularia* made by over 80 observers from many different parts of the country.

He also showed that the frequencies of the different phenotypes of *betularia* were to some extent influenced by the background on which the moths rested — they shifted their position so as to make the best of the local cryptic advantages offered.

Bernard was also very interested in non-industrial melanism and, with R. J. Berry, did some superb research in the Shetland Isles on *Amathes glariosa*. Using the mark-release-recapture technique on populations exchanged between the north and south of the islands, he was able to show that the melanic form *edda* was protected in the north from bird predation, where it was camouflaged. More generally, he appreciated that melanism of this type might be "pre-adaptive" so that black forms were ready for the favourable conditions of the industrial revolution.

His life's work was brought together in "The Evolution of Melanism", published in 1973. It is a classic, with its splendid subtitle "The Study of a Recurring Necessity".

Another species with which he worked was *Panaxia dominula*, and he made an important survey of the insect in 1942-43, reported in the *Proceedings and Transactions of the*

South London Entomological and Natural History Society. At the time of his death he was investigating the effects of natural selection on an Italian x British strain of the yellow form of the moth, breeding happily in his garden.

Another example of the excellence of his field work was his discovery, with A. L. Goodson, that the Marsh Mallow (*Althaea officinalis*) was the foodplant of *Hydraecia hucherardi* Mab. This was published in 1955 in the *Entomologist's Gazette*.

He was also fascinated by the problem of the distribution of the Vapourers with their usually wingless females, and he was particularly intrigued by the Japanese species *Orgyia thyellina* with its alternating broods of winged and wingless females.

Bernard in some ways belonged to the last century, when field work by first-class amateur naturalists, some of them like him truants from medicine, built up the taxonomy of the Lepidoptera. He it was, however, who showed by his genetic studies how right these amateurs were. Bernard also belonged to this earlier generation because then people were not afraid to enter into full-blooded controversy (his outspoken answer to J. W. Heslop-Harrison on melanism is a good example of this) but there was never anything underhand or scheming in his attacks, he just said what he thought. In character he was touchy, argumentative and often maddening, but he could laugh at himself and was extremely good company. He had one particular edge on us all — everyone loved him.

H. B. D. Kettlewell, D.Sc., M.A., M.B., F.R.E.S., etc.

By R. F. DEMUTH *

I would like to write about Bernard Kettlewell who died so tragically this May. He was my oldest friend; we were contemporaries at Charterhouse, lived on adjoining staircases at Caius College, Cambridge and shared digs in Holland Park, London until he married Hazel. Subsequently when he had settled into his practice at Cranleigh, I was a frequent visitor and being myself then unmarried, relished the family life which he enjoyed with Hazel and their two young children.

Bernard never did things by half. Fast sports cars were driven at excessive speed. When looking for larvae with me, he would consider it a failure if he did not find twice the number that I did. Furious quarrels were provoked but any party was a success from the moment Bernard entered the room. I first came across him at a school natural history outing at Hydon Ball in Surrey in 1922. He had seen a moth on a tree trunk and it had flown off and I had caught it and he demanded its return and I had refused and we did not speak for a long time. However, while we were still school boys we had spent a holiday together in the New Forest. This gave me my first insight into his acumen which subsequently made him famous. We spent days beating for larvae and at last had

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